

PROCEEDINGS  
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NOTES ON FISHES COLLECTED BY E. W. NELSON ON  
THE TRES MARIAS ISLANDS AND IN SINALOA  
AND JALISCO, MEXICO.

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While engaged in collecting other objects of natural history in Mexico during the summer of 1897, Mr. Nelson obtained a few fishes, which were submitted to the writer for identification and report.

The collection contains four species, one of which proves to be new. The specimens were obtained at Rosario, Ixtapa, La Laguna de Juanacatlan and the Tres Marias Islands.

Rosario is situated about 80 miles southeast from Mazatlan and about 18 miles from the sea. The specimens from that place were obtained from freshwater pools left by the drying up of that portion of the Rosario River. The exact locality was about 15 miles above tide.

Ixtapa is in the State of Jalisco, on the Ixtapa River, about 12 miles above the head of the Bay of Banderas. The specimens from Maria Magdalena Island came from the interior about 250 feet above tide level, from a small stream which communicates with the sea during the rainy season. Those from Maria Cleofa came from a small freshwater stream close to the sea, but communicating with it only in wet weather. Maria Magdalena and Maria Cleofa islands are the two most southern of the Tres Marias group, situated about 60 miles off the coast of Jalisco. La Laguna de Juanacatlan is in the Sierra de Juanacatlan, in western Jalisco, at an altitude of 6,500 to 7,000 feet.

This collection, though small, is of interest, in that it increases our knowledge of the distribution of the species, and probably indicates a close relation between the freshwater fish fauna of the Tres Marias Islands and that of the adjacent mainland.

#### LIST OF SPECIES.

##### Family **Atherinidæ**. The Silversides.

###### 1. *Chirostoma humboldtianum* (Cuvier & Valenciennes).

The collection contains 5 specimens of this species. They do not differ materially from specimens from the City of Mexico, the type locality.

Head  $3\frac{1}{4}$  to  $4\frac{1}{4}$  in length of fish; depth  $4\frac{1}{2}$  to  $5\frac{1}{2}$ ; eye  $3\frac{3}{4}$  to  $4\frac{1}{2}$  in head; snout 3 to  $3\frac{1}{2}$ . Dorsal IV-I, 10 to 12; Anal I, 16 to 19; scales 46, 13 to 15 in a transverse series.

##### Family **Mugilidæ**. The Mulletts.

###### 2. *Agonostomus nasutus* Günther.

The collection contains one specimen from Ixtapa, 3 from Maria Magdalena, and 2 from Maria Cleofa.

The specimen from the mainland agrees well with those from the islands.

The specimens are from  $2\frac{3}{4}$  to  $4\frac{1}{4}$  inches in length and present the following measurements: Head  $3\frac{1}{2}$  to 4; depth  $3\frac{3}{4}$  to 4; eye  $3\frac{3}{4}$  to  $4\frac{1}{2}$  in head; snout  $3\frac{1}{2}$  to 4; interorbital width  $2\frac{3}{4}$  to  $3\frac{1}{2}$ ; maxillary  $3\frac{1}{4}$  to  $3\frac{1}{2}$ . Dorsal IV-I, 8; Anal II, 9; scales 42 or 43, 11 in transverse series.

Type locality, Rio Geronimo, Central America.

##### Family **Cichlidæ**. The Cichlids.

###### 3. *Heros beani* Jordan.

Eleven specimens of this common species obtained at Rosario, July 27, in the same pools from which the specimens of *Awaous nelsoni* were taken.

Head  $2\frac{5}{6}$ ; depth  $2\frac{1}{2}$ ; eye 4; snout  $2\frac{9}{10}$ . Dorsal XV, 11; Anal V, 7; scales 6-30-11; pores in lateral line 19 + 11.

Type locality, Mazatlan, Sinaloa.

##### Family **Gobiidæ**. The Gobies.

###### 4. *Awaous nelsoni*, new species.

The collection contains 8 specimens of a goby which proves to be an undescribed species of *Awaous*.

Type locality, Rosario River, at Rosario, Sinaloa, Mexico. Collector, E. W. Nelson, July 27, 1897.

Type No. 48836, U. S. Nat. Mus. Cotypes Nos. 48837, U. S. Nat. Mus.; 533 U. S. Fish Comm.; and 5793, L. S. Jr. Univ. Mus. Collector's No. 839.

*Awaous nelsoni* Evermann.

Head  $3\frac{1}{2}$ ; depth 6; eye  $5\frac{3}{4}$  in head; snout 3; maxillary  $2\frac{7}{8}$ . D. VI-11; A. 11; scales about 63. Body long, compressed, and tapering posteriorly; head large, quadrate; mouth large, nearly horizontal, lower jaw included; snout abruptly decurved; top of head flat, the interorbital with a slight median groove with a thin, raised edge on each side; maxillary reaching about to vertical of anterior edge of pupil. Teeth in bands on jaws, very small, the outer somewhat enlarged. Pectoral rays normal, the longest  $1\frac{1}{2}$  in head; ventrals completely united, the disk free from belly,  $1\frac{3}{4}$  in head. Dorsal fins separated by a space about  $\frac{2}{3}$  diameter of eye; dorsal spines slender, weak, about  $1\frac{2}{3}$  in head; soft dorsal and anal similar, each free from caudal; caudal fin rather short and rounded, its middle rays about  $1\frac{1}{4}$  in head. Inner edge of shoulder girdle with 3 dermal papillæ; gill-membranes broadly united to the isthmus; eye moderate, high up, the interorbital width equal to the eye's diameter. Scales ctenoid, very small, and irregularly crowded anteriorly, much larger posteriorly, about 15 rows counting from origin of soft dorsal downward and backward to the anal fin; head naked, but with slight indication of a few minute embedded scales on opercles. Color grayish; head mottled and blotched with dark; side with 7 or 8 black blotches, the largest under middle of pectoral fin; dorsals pale, crossed by several lines of black spots; caudal pale, with about 6 or 7 dark cross-bars; ventrals and anal pale; pectorals pale, dusted with dark specks and with a small dark blotch at base of upper rays. Length, 4 inches.

The 7 specimens taken as cotypes do not show any considerable variations from the type. The more important variations are indicated in the following description: Head  $3\frac{2}{3}$  to  $3\frac{3}{4}$ ; depth 5 to  $6\frac{1}{2}$ ; eye 5 to 6 in head; snout  $2\frac{3}{4}$  to 3. D. VI-11; A. 10 or 11; scales 60 to 70.

The number of scales seems to be the most unstable character, but this is partly due to the difficulty of counting them accurately. They are so crowded and irregularly arranged anteriorly as to make definite counting impossible.

*Awaous nelsoni* seems most closely related to *A. taúsica* (Lichtenstein), from which it differs in the larger scales on posterior part of body, the broader interorbital, the longer snout, and the darker coloration.

I take pleasure in naming this interesting species for Mr. Edward William Nelson, the well-known ornithologist, in recognition of his early work upon the fishes of Illinois, in 1874-'5.